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Procedia Computer Science 60 (2015) 1482 – 1489

Procedia Computer Science

19th International Conference on Knowledge Based and Intelligent Information and Engineering Systems

Chance for Conversation Activation on Shopping Activities

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Abstract

Many people would like to live long with healthy body and mind. If you help people live well, you should take psychological stress into account. In this paper, we will support people in the situation of shopping activities. We propose the Shopping Chat Method and let a participant perform shopping along this method. Finally, we consider how to extract "novel" information about shopping activities from participants.

Keywords: psychological stress; shopping activities; Shopping Simulator; Shopping Chat Method ; conversation activation

1. Introduction

1.1. Problems around aged people

In our country, many people are interested in health. We think many people want to live long with healthy body and mind. As people get older, however, physical activities[1] decrease because of retirement, bereavement, and so on. In addition, there are many people who cannot go outside because of backache, arthralgia, and so on.

The Care-nursing Support Website(*Kaigo-ouen Net*) says that people should look after aged people so that they can become independent[2]. It is important that society as a whole support aged people, but social welfare spending is increasing year by year. We think it is also important that people are not too dependent on society but stand on their own feet.

doi:10.1016/j.procs.2015.08.232

1.2. Motivate people without psychological stress

Generally, aging will be advanced if a person does not communicate with many people or does not often go out. We assume that aging will be delayed if we can encourage people to perform intelligent activities, for examples, thinking, inference, or idea generation.

We want to support aged people. However, when you want to do that, you should take psychological stress into account. For instance, the Music Puzzle is proposed as the way of the brain activation[3]. In this puzzle, people rearrange the Sound-cell and complete a song[4]. But we think this method is difficult for people to use constantly. Similarly, it is not so nice to force people to do some sports or eating habits.

1.3. Support in shopping activities

Therefore we will support people in the situation of shopping activities. Shopping activities are one of the daily activities, and people(both young and aged) should do that usually by themselves. There are many people who visit a real grocery shop, and there are also people who use online shop or delivery service(ex. COOP). Moreover, convenient stores are visited not only by young and also by aged recently in Japan[5], so shopping activities are one of the essential daily activities for many people. Therefore, in the situation of shopping activities, we thought we could support people to live well. In particular, we want to encourage people to do some intelligent activities in the process of shopping without giving them psychological stress.

Now, how should we encourage people to perform intelligent activities in the process of shopping? In addition, how should we define the criteria of “intelligence”? In chapter2 and chapter3, we will examine that the shopping activities are really intelligent activities. In chapter4, we will propose the Shopping Chat Method, and let participants perform shopping with this method. Then we will examine that we can encourage them to perform intelligent activities. Specifically, we will examine that we can extract “novel” information from participants.

2. Collection of Shopping Activities Data

We want to support people in the situation of shopping activities so that they can live well. These activities seem to be more intelligent than the others, for instances, washing, cleaning, and so on. We conducted the following observations to examine that the shopping activities are really intelligent activities. In these observations, we asked participants to report orally what they thought.

2.1. Collection in a real grocery shop

Participants were 3 house-workers. The observation took place in the grocery shop which each participant often visit. In the shops, we traced participants and collected their utterance on shopping (like Fig. 1). We asked them in advance to report orally what they thought, for examples, what they would purchase, what they would make as dinner, or how they would change their plan.

Fig. 1. How to record shopping activities (Participant(A) is walking around a frozen food area.)

2.2. Collection in the "Shopping Simulator"

In many research about consumer behavior(ex. [6]), they usually observe consumer in a real grocery shop. However, this way of observation may be difficult for observers and for participants. Abe said that "The way of observation in my research requires lots of time and labor, so it is difficult to collect lots of shopping activities data."[6].

Accordingly, we developed the Shopping Simulator. In this simulator, user can move a character and walk around virtual shop(Fig. 2). Upper part means a basket which the character has, and lower part means a floor in the virtual shop. If you want a particular item, you can drag the picture of item from floor to basket. On the other hand, if you stop purchasing an item, you can drag the picture of item from basket to floor. There are many areas in the virtual shop, for examples, vegetables, bakery, or snacks. When a character approaches a certain area, user can see information on each item, which information fundamentally consists of name, amount and price(Fig. 3).

Fig. 2. The construction of "Shopping Simulator"

Fig. 3. User can see information on item.(In this scene, a user is looking at information on a squid.)

Participants were 34 people, and 12 of them were house-workers, 11 of them were boarders, and 11 of them were home-students. We showed them the following instructions(Fig. 4).

(1) Let us observe your shopping activities.
(2) You can visit “virtual grocery shop” instead of real grocery shop because it is difficult for us to trace your activities in a real grocery shop.
(3) You can do your shopping freely. For examples, you can walk around the shop for preparing dinner, you can only purchase the items which you really want, or you can purchase nothing.
(4) We want you to say what you think so that we can understand your thinking.

Fig. 4. Instruction about experiment

2.3. Result

In 2.1 and 2.2, we collected 37 shopping activities data. We constructed a corpus based on participants' utterances(Fig. 5).

Time	Protocol or [Subjective-Info]
0852	[入店]じゃまずお野菜行きまーす
0858	今日のﾒﾆｭｰはー、うーん
0903	白菜だ、高いなあ。ｷｭｳﾘ、高いなあ！
0930	ﾚﾀｽ、を買います
0933	そして、うーん、ｱｽﾊﾟﾗも買いましょう
0943	えーとあとは、ﾆﾝｼﾞﾝ。3本100円、意味は無いけど買っておこう
0952	うーん、じゃあ今日はー、うーん、
1000	ﾆﾗもね、ちょっと高い
1005	ﾎｳﾚﾝｿｳはー、[値段的に]意外と大丈夫。じゃあ今日はー、ﾊﾟｽﾀにしよう。ﾎｳﾚﾝｿｳと
1012	じゃ次はー、果物をちょっと見まーす
1017	ﾘﾝｺﾞは？おっﾘﾝｺﾞ安いっすね
1026	ｺﾞｰﾙﾃﾞﾝｷｳｲ、3個で200円、ふむふむ。じゃﾘﾝｺﾞにしよう。ﾘﾝｺﾞ2個買います
1043	あっここにまだお野菜[売場]あった。うーん…ﾏｲﾀｹ。あっﾏｲﾀｹ、[値段的に]いいと思います
1103	こんな感じですかねー
1107	ﾓﾔｼ…ｻﾄｲﾓ中国産。中国産のｻﾄｲﾓなんて珍しいですね
1122	ﾐﾆﾄﾏﾄ、お弁当のはまだあるから大丈夫
1133	じゃｶﾎﾞﾁｬも買っておこう。お弁当のおかず用ね
1141	[惣菜売場を見て]お惣菜はｽﾞﾙする時しか買わないでー、
1146	これは、鮮魚[売場]。ｲｶ、3杯。3杯は買わないな…
1152	[牡蠣を見て]お鍋もやらない。ｻﾝﾏ…もやらない
1159	ﾊﾟﾊﾟの、朝ごはんのｱｼﾞの開き[を探おう]
1202	あっこれか。2枚200円、まあそこそこ安い

Fig. 5. an example of corpus

We extracted knowledge about price, judgement about freshness, or any other thinking from corpus, and we worked up these thinking into the following list(Fig. 6).

(I) A participant could judge a particular aspect of item.
judge-price(item): A participant could judge a [market] price of item.
judge-district(item): A participant could judge a [famous] producing district of item.
judge-season(item): A participant could judge a [best] season of item.
judge-quality(item): A participant could judge a quality of item.
(*derivation*)
judge-freshness(item): A participant could judge a freshness of item.
judge-use(item): A participant could judge a use of item.
judge-capacity(item): A participant could judge an inner capacity of item.
judge-material(menu): A participant could judge materials of menu.
judge-preference(item): A participant could judge a preference of item [in his/her family].
judge-stock(item): A participant could judge a stock of item in a shop.
judge-location(item): A participant could judge a location of item in a shop.

Fig. 6-1. The list of “Thinking”

judge-comparison(item): A participant could judge an item based on comparison with the others.
judge-advance(item): A participant could judge an item based on advance knowledge(ex. an ad).
judge-shop(item): A participant could judge an item based on a whole evaluation of shop.

(II) A participant could manage a particular aspect of his/her behaviour.
manage(budget): A participant could manage a budget.
manage(stock): A participant could manage a stock in his/her home.
manage(baggage): A participant could manage a baggage(ex. frozen food, heavy items, etc.).
manage(schedule): A participant could manage a schedule.
manage(budget): A participant could manage a budget.
manage(progress): A participant could manage a state of progress.
(*derivation*)
manage(balance): A participant could manage balance among items he/she will purchase.

(III) A participant recollected a particular item, which was a cause of his/her following activities.
ex. cause(*tofu*): A participant purchased a *tofu*, and he/she planned to purchase a ginger.

(IV) Others
makesub(subgoal): A participant set a subgoal in his/her process of shopping.
complete: A participant declared the end of shopping.

Fig. 6-2. The list of "Thinking"

3. Example of Utterances in Shopping Activities

In chapter2, we examined that the shopping activities are really intelligent activities. In addition, we expressed "intelligence" as the list of Thinking.

As we said in chapter1, we want to encourage people to do some intelligent activities without giving them psychological stress. Otake said that "The shortage of social communication is one of the main factor of dementia"[7]. We also think that social communication is important for maintaining cognitive functions. In this chapter, we will show the example of utterances/conversations in shopping activities, and we will show chance for utterance/conversation activation on shopping activities. Moreover, we will examine that we can encourage them to perform intelligent activities with Shopping Chat Method in chapter4.

Shown in Fig. 7, Participant(B) has a stickle to a specific item(milk-X). You can see that the specific item caused a chat activation in Fig.5. If someone prefers milk-Y or milk-Z to milk-X, a conversation will be activated. In addition, a choice of milk was caused by a choice of meat. You can see this participant's ability of budget management, and you may think that this participant performs mental activity.

B: [In front of beverage area] I see … oh, I want milk-X.
B: milk … My family like milk-X. We will not purchase the others.
B: I know milk-X is more expensive than the others, but milk-Y is not better than milk-X …
B: meat … [She gave up to purchase beef at meat area previously] I chose pork and saved my money. So I can spend my money on milk!

Fig. 7. The utterances of Participant(B) (A,B,C…means participants.)

Participant(C) was house-worker, and Participant(D) was her daughter (Fig. 8). They discuss which vegetables are good for *yakisoba.* In this case, they could not find a noodle for *yakisoba* in the end, so they planned to purchase a noodle at the other shop.

C: What's best for our lunch? … ok, let's cook *yakisoba*. First, I need green peppers …
D: Why?? [She dislikes green pepper]
C: I also need a cabbage.
D: How about carrots?
C: Carrots remain in a refrigerator.

(…)

C: oh … where is noodle[for *yakisoba*]?? This shop doesn't have one??
C: Now, let's drop in at Shop-P in our way to home. [She said to her daughter] Just remember it!
D: Shop-P?
C: Yes, I don't want to change my plan[to cook *yakisoba*]. If I do so, I should return all these vegetables to vegetable area. It's troublesome!!
D: Mummy, that's a cream puff! I want it!

Fig. 8. The utterances of Participant(C)and(D)

Participant(E),(F),(G)and(H) are house-workers(Fig. 9). We asked them to discuss the virtual grocery shop in the Shopping Simulator after our observation. They mainly focus on a price of item and an assortment in shop.

E: Vegetables in this [virtual]shop were expensive!
F: Tomatoes are good in shop-Q[,which she often visit]!
E: In shop-Q, I usually purchase tomatoes and callots. My son really like that!
G: Does this shop[in the simulator] have carrots?
H: Yes, but it was produced at *Chiba*. I like one at *Gunma*.

Fig. 9. The utterances of Participant(E),(F),(G)and(H)

In this chapter, we examined that the shopping activities were really intelligent activities. People could chat, discuss, or state their opinion actively in the situation of shopping activities. Now we want to extract more active utterances/conversations from people. In the next chapter, we will propose the Shopping Chat Method, in which people can perform intelligent activities with shopping.

4. Shopping Chat Method

In chapter3, we examined that the shopping activities were really intelligent activities. Now we want to extract more active utterances/conversations from people. In this chapter, we will propose the Shopping Chat Method(Fig. 10), in which people can perform intelligent activities with shopping. This method consists of the following stages.

4.1. Planning-stage

User can plan their shopping activities. User can input an item name or a menu name by manuscript or voice. In this stage, you can communicate with this user. For examples, you can ask "Why will you purchase that?" You can also give useful information or idea to the user, "Now is the best season for Pacific saury!", "Today is hot, so how about eat fine noodle??", and so on.

4.2. Shopping-stage

User can perform shopping. We recommend that they use the "Shopping Simulator" so that they can chat or converse freely. In stage(iii)or(iv), user can look back their shopping activities with their utterances/conversations.

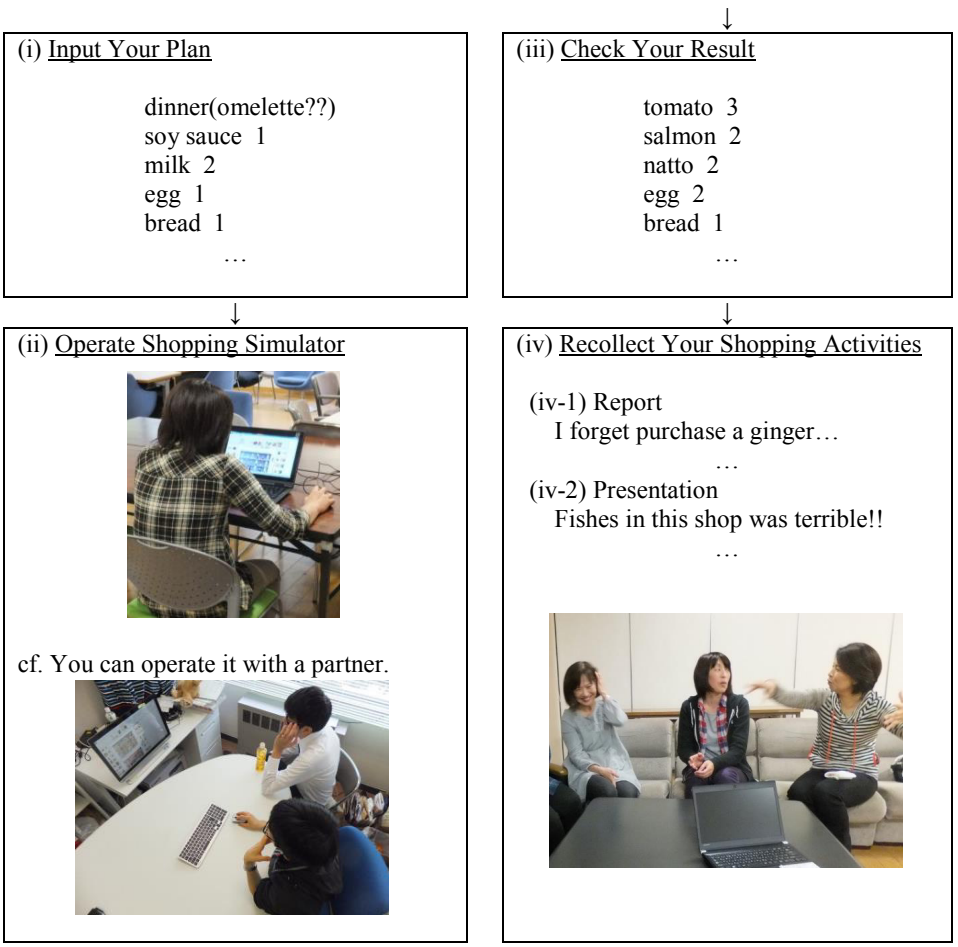

Fig. 10. The Shopping Chat Method

4.3. Result-stage

User can check the result of their shopping activities. User can use this result in stage(iv) and compare it with plan(stage(i)).

4.4. Recollection-stage

In this stage, user can experience more intelligent activities than the other stages. In the "Report-level"(iv-1), user can recollect the process of their shopping. They will experience intelligent activities. In the "Presentation-level"(iv-2), user can talk freely, for examples, what they detect in shop, what they want to claim about shop, and so on.

5. Discussion

As we have said repeatedly, we want to encourage people to perform intelligent activities. Now, how about the criteria of "intelligent"? We prepare the following definition: when a participant can show the "novel" information about shopping activities to the other participants(or the experimenters), this participant's activities are regarded as

“intelligent”. In the collection of shopping activities data(chapter2), most participants perform shopping alone. But we think their shopping activities should be evaluated by the other people. Accordingly, “novel” information will be discovered by them and chance for utterance/conversation activation will be also discovered.

In our collection of utterances/conversations, participants can talked actively, so we think people can perform shopping activities without psychological stresses.

6. Conclusion

This paper suggested how to support people in the situation of shopping activities. We conducted observations to determine if the shopping activities are really intelligent activities, and we showed some examples of utterances/conversations in shopping activities. Our participants talked actively, for example, when they found their favorite items in grocery shop, they complain about price, or they let the other participants know useful information. Accordingly, we think we can activate utterances/conversations if we give a topic of shopping to people.

Finally, we proposed the Shopping Chat Method. In this method, we think participants perform intelligent activities with shopping.

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